

METHOD AND OPERATIONAL STRATEGY FOR CONTROLLING VARIABLE  
STATOR VANES OF A GAS TURBINE POWER GENERATOR COMPRESSOR  
COMPONENT DURING UNDER-FREQUENCY EVENTS

ABSTRACT OF THE DISCLOSURE

[0026] A method is provided for controlling variable inlet and stator vanes of a heavy-duty gas turbine electrical power generator compressor component upon occurrence of power grid under-frequency events. Variable inlet guide vanes and the front four variable stator vanes of the compressor are ganged together by means of a common actuation mechanism. Altering the angle of the ganged vanes changes the overall airflow consumption of the compressor and affects the amount of turbine output power produced. Predetermined operational schedules for varying the angular position of the stator vanes in accordance with compressor speed are defined for both nominal and under-frequency operating conditions to ensure optimum compressor efficiency without violating minimum safe compressor surge margin criteria. During a power grid under-frequency event, the variable stator vanes of the compressor are operated in a manner that provides a smooth transition from the predetermined nominal operational schedule to the predetermined under-frequency operational schedule.